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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,416	07/18/2003	John A. Fifield	BUR920020042US1	1415

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EXAMINER

GAGLIARDI, ALBERT J

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,416

Applicant(s)

FIFIELD ET AL.



Examiner

Albert J. Gagliardi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-13 and 18-23 is/are allowed.
- 6) ☒ Claim(s) 1-3, 14-17 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/03 (2).
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the claim includes a limitation of wherein the detector circuit is activated only when semiconductor circuits are “non-inactive” (active?), but it appears that the detector should be activated when the circuits are inactive. As such the function and nature of the generated timing signals is unclear.

The remaining claims are rejected on the basis of their dependency.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

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commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 14-15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend *et al.* (US 6,909,159 B2) in view of Brady *et al.* (US 6,665,161 B1).

Regarding claim 1, as best understood, *Friend* discloses (Figs. 4-7) a detector circuit (31) for detecting an alpha particle or cosmic ray strike (see col. 4, lines 15-16) in a silicon substrate having semiconductor circuits fabricated therein (col. 5, lines 15-23) comprising: a detector circuit (31) connected to the silicon substrate to provide a detectable digital signal when the silicon substrate receives an alpha particle or cosmic ray strike (col. 7, lines 36-38); and a generating circuit (36) capable of generating a timing signal that specifies periods of non-active operation of the semiconductor circuits.

Friend does not disclose that the detector circuit is activated by the timing signal only when the semiconductor circuits are non-inactive to eliminate false triggering from substrate currents flowing during normal switching operations of the semiconductor circuits.

Regarding activating the timing circuit only when the semiconductor circuits are non-inactive to eliminate false triggering from substrate currents flowing during normal switching operations of the semiconductor circuits, *Brady* discloses a semiconductor circuit including a detector circuit (see generally Fig. 1) wherein the system includes provisions to deactivate components of the detection system during switching operation (i.e., start-up) to eliminate false triggering (col. 7, lines 17-20). Although, *Brady* does not

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disclose the specific provisions for disabling the circuitry during such switching operations, *Brady* does disclose that the circuitry may be operated in conjunction with timing signals (col. 7, lines 19-20). *Brady* further discloses the use of timing signals as at least one of a variety of functionally equivalent means to activate/deactivate semiconductor circuits (col. 6, lines 7-31). Therefore it would have been obvious to a person of ordinary skill in the art to modify the device disclosed by *Friend* so as to deactivate the detector circuit to prevent false triggering during periods of active operation (i.e., startup), as suggested by *Brady* wherein the specified periods are generated by timing signals as known in the art.

Regarding claim 2, as best understood, in the apparatus as suggested by *Friend* in view of *Brady*, the timing signal could be generated from a clock signal for clocking and operating the semiconductor circuits (see *Friend* for example at col. 8, lines 13-32).

Regarding claims 14-15, the method recited according to claims 14-15 is suggested by the apparatus as suggested by *Friend* and *Brady* as applied above, and is rejected accordingly.

Regarding claim 24, the apparatus recited according to claim 24 is suggested by the apparatus as suggested by *Friend* and *Brady* as applied above, and is rejected accordingly (see also Fig. 6 of *Friend*).

5. Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Friend* and *Brady* as applied above, and further in view of Taylor *et al.* (US 2003/0131307 A1) and Callaway *et al.* (US 6,829,176).

Regarding claim 3, *Taylor* discloses a system of managing volatile storage memory such as SRAM wherein, upon the occurrence of a predetermined event, self-

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testing and error correction of the memory is initiated (pars. 0010-0012) wherein the error correction may include a reload of repair data (par. 0036). *Taylor* teaches that advantages to limiting memory checking to the occurrence of a predetermined event include reduction of performance penalty and reduced power consumption (par. 0010). Although *Taylor* does not specifically disclose that the event is detection of an alpha particle or cosmic ray strike, *Taylor* does disclose that the reason for initiation of the testing and error correction is because of potential soft errors caused by radiation such as alpha particles (par. 0004). Therefore it would have been obvious to a person of ordinary skill in the art to couple the detector circuit suggested by *Friend* and *Brady* to volatile memory such as SRAM so as to allow event driven testing and error correction to be performed upon the occurrence of an event likely to cause a soft error such as the actual detection of a radiation strike in order to allow for a system that is less susceptible to failures and with lower performance penalty and power consumption. The use of redundant latches for initiating repair of SRAM is well known (see for example *Calloway*).

Allowable Subject Matter

6. Claims 4-13 and 17-23 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter:

Regarding independent claims 4, 6, 9, 17, 19 and 22, the prior art (i.e. *Friend et al.* – US 6,909,159 and *Brady et al.* – US 6,651,161), while generally suggesting methods and apparatus including a means for detecting an alpha or cosmic ray strike in a silicon substrate, does not disclose or fairly suggest methods or apparatus for detecting an alpha

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or cosmic ray strike in a silicon substrate including the more specific arrangements as recited according the above independent claims.

The remaining claims are allowed on the basis of their dependency.


Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (571) 272-2436. The examiner can normally be reached on Monday thru Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Albert J. Gagliardi
Primary Examiner
Art Unit 2878

AJG